



A Review of VelocityDB NOSQL Graph Database

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Abstract

In today's dynamic and agile business environment, digital world is growing in terms of volume, variety and velocity commonly referred as Big Data. In past few years, the visualization analytics has gain a lot of momentum. Continuous endeavors are made to provide database model for graph based data. For a conventional relational data model to handle such massive and complex data sets, it can prove to be cumbersome and costly. Instead a hybrid NOSQL database can be helpful for the same.

Amongst, the various NOSQL databases offered in the market, this paper will focus on Graph Databases namely VelocityDB. This article will focus on the review of VelocityDB which is a hybrid of Object and Graph database known as VelocityGraph. With the release of its latest version 5.1 on February 22, 2016, VelocityDB stands as an excellent choice amongst all Graph DB. Founded by Mats Persson in 2011, VelocityDB and VelocityGraph are based on C# .NET framework, and most importantly it's an open source database.

Introduction

VelocityDB being a hybrid database offers the features of an Object and Graph Database. VelocityGraph has various features such as high scalability, performance, import and export facility to and from CSV/JSON. Flexibility to use this database on any platform such as android, iOS, Windows gives it an extra edge. Using the social media dataset available online, a review was done on how to implement a graph test, The article will focus on all such features and will focus on a database implementation of social graph test.

Example of VelocityGraph-

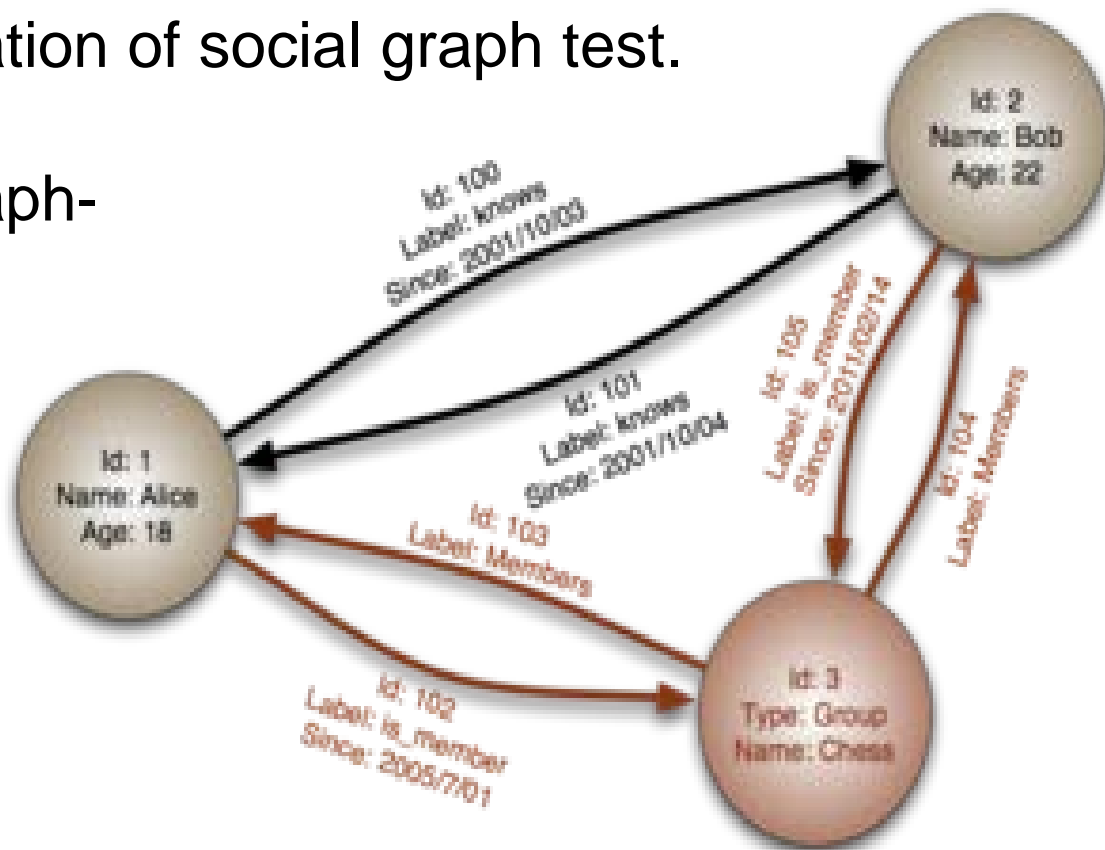


Figure 1-Example of Velocity Graph

An Edge links two vertices. Along with its key/value properties, an edge has both a directionality and a label.

A vertex maintains pointers to both a set of incoming and outgoing edges.

A property is the features associated with an edge and vertex.

Design and Implementation of VelocityGraph

For the database implementation, we considered a sample social media data available online. With the help of this dataset of 1,189K users, we implemented a sample database for Facebook users to design a social graph test.

The data set is of form

<uid> <friend_uid_1> <friend_uid_2> .. <friend_uid_j>

Each line contains a userid and the userid of their friends.

This test helped us to find the facebook users with maximum number of friends. The next query determined the number of unique 2nd level friends a given Facebook user has- this helped in figuring friends or my friends.

The schema had following

- Vertex- FacebookUser
- Edge- FacebookFriend
- Property- Country, Income etc.

Features

- Scalable- smart caching enables many instances of database to be used simultaneously without running out of memory
- High Performance-
- Export/Import- this facility enables the VelocityDB to export and import to and from JSON, CSV
- ACID is supported
- In-Memory Only Option- VelocityDB can be used in combination with High Availability functionality replicating data between servers. This feature enables it to become in-memory database
- A DatabaseManager is present which could be utilized for DBA activities.
- Linqpad- A query pad for VelocityDB and VelocityGraph

COMPARISON

a) SPEED- Velocity as depicted from the below figure is lot faster than other graph and object databases.

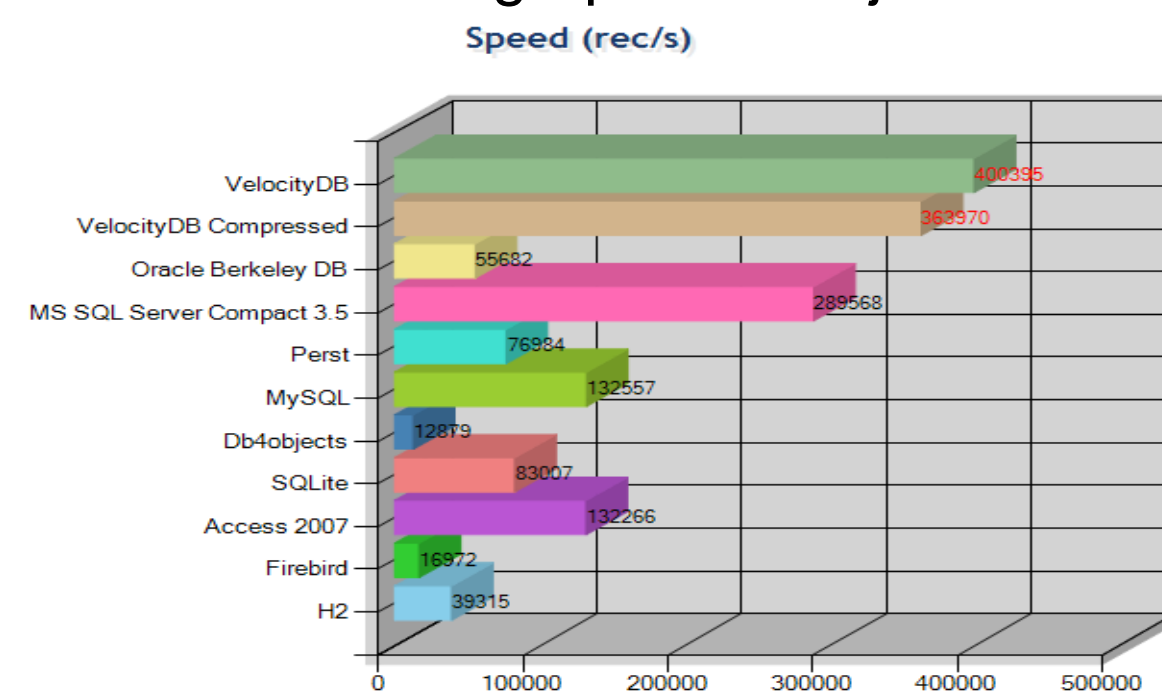


Figure 2- Comparison of VelocityDB in terms of Speed

b) Comparison with MongoDB in terms of speed and database size when compressed.

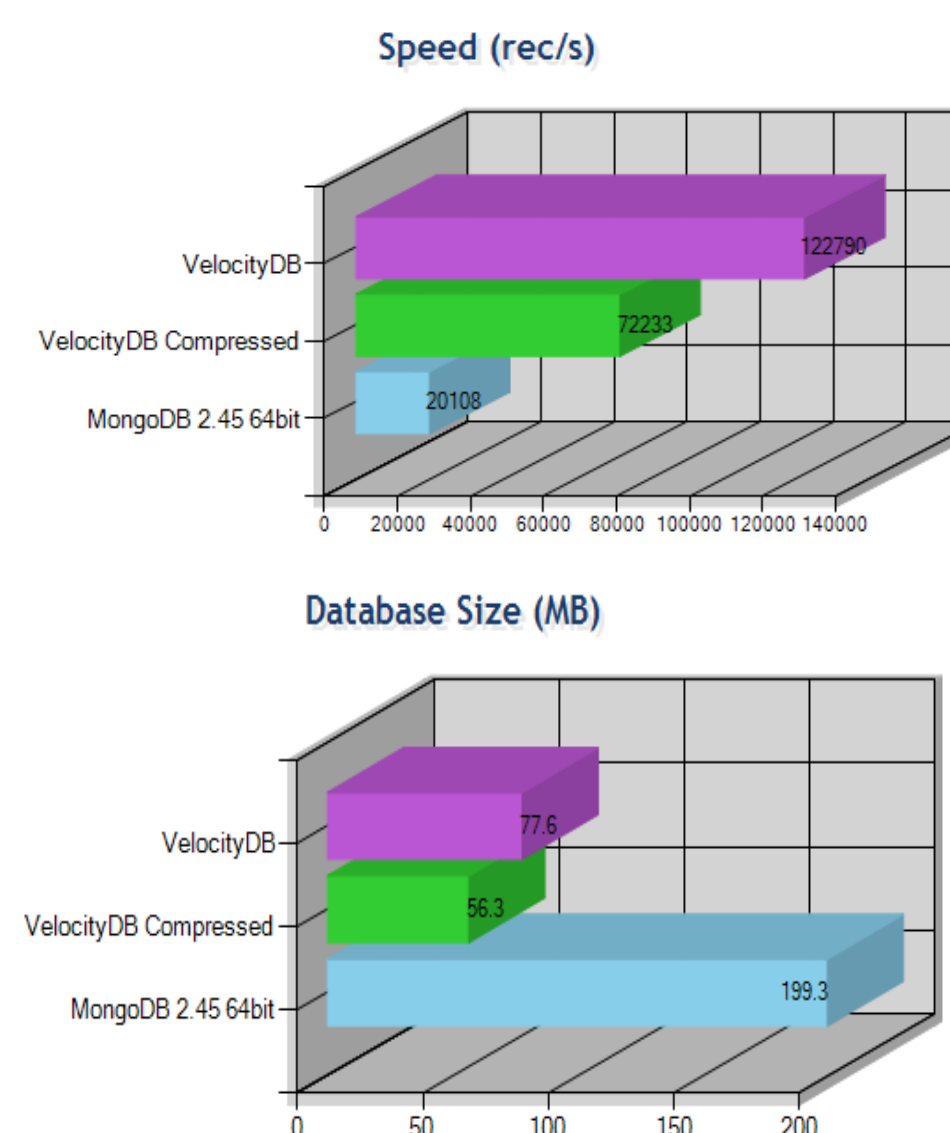


Figure 3- Comparison with MongoDB in terms of Speed and Size

Conclusion

VelocityDB is an excellent choice when a NoSQL object and graph database is to be chosen. With this database, one can save time, cost and also deliver a highly scalable and performance oriented application. It stands out as it does not utilize a lot of disk space and CPU usage. VelocityDB is beneficial as it can be used on both standalone PC and distributed servers as well. With the benefits of flexibility, scalability, effective management of unstructured data, tuning of application to the finest details and high performance VelocityDB is an exceptional example.

VelocityDB has launched its fifth version with various attractive features like-fast as there are no dependencies and consumes latest technologies, scalability with compression and encryption, GUI database manager, can be run across various platforms like Linux, Windows 10PC, iOS, android, Xbox and many more. Lastly it has import and export facility from JSON and CSV.